

CLAIMS

What is claimed is:

1. A lightweight subsea intervention package for use in servicing a subsea well,  
5 said subsea well comprising at least one of a vertical Christmas tree or a horizontal Christmas tree, said subsea intervention package being operable for containing said subsea well while using at least one of tubing, coiled tubing, or wireline during said servicing of said subsea wells, said subsea intervention package comprising:
  - a lower package attachable to said subsea well regardless of whether said  
10 subsea well comprises said vertical Christmas tree or said horizontal Christmas tree, said lower package comprising at least two hydraulically actuated valves neither of which are B.O.P.'s, at least one of said at least two hydraulically actuated valves being operable for cutting said tubing, coiled tubing, or wireline and then closing to form a seal for sealing said subsea well, said lower package defining a bore through  
15 said at least two hydraulically actuated valves which is greater than six and one-eighth inches;
  - a disconnect mechanism comprising a first portion and a second portion, said first portion of said disconnect mechanism being secured to said lower package, said first portion and said second portion of said disconnect mechanism being selectively  
20 separable;
  - an emergency disconnect package mountable to said second portion of said disconnect mechanism, said disconnect mechanism comprising at least one hydraulically actuated valve, said emergency disconnect package defining a bore

through said at least one hydraulically actuated valve which is greater than six and one-eighth inches, said lightweight subsea intervention package being light enough and defining a footprint small enough such that said lightweight subsea intervention package can be installed on said subsea well utilizing a vessel with a handling  
5 capacity less than that of a semi-submersible platform.

2. The lightweight subsea intervention package of claim 1, wherein said at least two hydraulically actuated valves and said at least one hydraulically actuated valve define a bore therethrough which is greater than seven and one-eighth inches.

10 3. The lightweight subsea intervention package of claim 1, wherein said lower package weighs between ten and thirty tons, and said emergency disconnect package weighs between five and twenty tons.

15 4. The lightweight subsea intervention package of claim 1, wherein said emergency disconnect package is securable to a riser and wherein said emergency disconnect package is operable to seal a lower end of said riser if said disconnect mechanism is activated to separate said emergency disconnect package from said lower package.

20 5. The lightweight subsea intervention package of claim 1, wherein a first of said at least two hydraulically actuated valves comprises a fail-safe actuator mounted on one side of a valve body and a manual override actuator mounted on an opposite side

of said valve body.

6. The lightweight subsea intervention package of claim 1, wherein a first of said at least two hydraulically actuated valves comprises a gate valve which comprises a  
5 cutter and seal assembly.

7. A lightweight subsea intervention package for use in servicing a subsea well, said subsea well comprising at least one of a vertical Christmas tree or a horizontal Christmas tree, said subsea intervention package being operable for containing said  
10 subsea well while using at least one of tubing, coiled tubing, or wireline during said servicing of said subsea wells, said subsea intervention package comprising:

a lower package attachable to said subsea well regardless of whether said subsea well comprises said vertical Christmas tree or said horizontal Christmas tree, said lower package comprising at least two hydraulically actuated valves neither of  
15 which are B.O.P.'s, at least one of said at least two hydraulically actuated valves being operable for cutting said tubing, coiled tubing, or wireline and then closing to form a seal for sealing said subsea well, said lower package defining a bore through said at least two hydraulically actuated valves which is greater than seven inches, said lightweight subsea intervention package being light enough and defining a footprint  
20 small enough such that said lightweight subsea intervention package can be installed on said subsea well utilizing a vessel with a handling capacity less than that of a semi-submersible platform.

8. The lightweight subsea intervention package of claim 7, wherein said lower package weighs between ten and forty tons.

9. The lightweight subsea intervention package of claim 7, further comprising:

5 a disconnect mechanism comprising a first portion and a second portion, said first portion of said disconnect mechanism being secured to said lower package, said first portion and said second portion of said disconnect mechanism being selectively separable;

an emergency disconnect package mountable to said second portion of said  
10 disconnect mechanism, said disconnect mechanism comprising at least one hydraulically actuated valve, said emergency disconnect package defining a bore through said at least one hydraulically actuated valve which is greater than seven inches.

15 10. The lightweight subsea intervention package of claim 9, wherein said at least two hydraulically actuated valves and said at least one hydraulically actuated valve define a bore therethrough which is greater than seven and one-eighth inches.

11. The lightweight subsea intervention package of claim 9, wherein said  
20 emergency disconnect package is securable to a riser and where said emergency disconnect package is operable to seal a lower end of said riser if said disconnect mechanism is activated to separate said emergency disconnect package from said lower package.

12. The lightweight subsea intervention package of claim 7, wherein a first of said at least two hydraulically actuated valves comprises a fail-safe actuator mounted on one side of a valve body and a manual override actuator mounted on an opposite side of said valve body.

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13. The lightweight subsea intervention package of claim 7, wherein a first of said at least two hydraulically actuated valves comprises a gate valve which comprises a cutter and seal assembly.

10 14. A method for making a lightweight subsea intervention package for use in servicing a subsea well, said subsea well comprising at least one of a vertical Christmas tree or a horizontal Christmas tree, said subsea intervention package being operable for containing said subsea well while using at least one of tubing, coiled tubing, or wireline during said servicing of said subsea wells, said subsea intervention  
15 package comprising:

providing a lower package attachable to said subsea well;

providing that said lower package comprises at least one hydraulically actuated valve operable for both cutting said tubing, coiled tubing, or wireline and then closing to form a seal for sealing said subsea well;

20 providing that said lower package defines a bore through said at least two hydraulically actuated valves which is greater than six and five-eighths inches; and  
providing that said lightweight subsea intervention package is light enough and defines a footprint small enough such that said lightweight subsea intervention

package can be installed on said subsea well utilizing a vessel with a handling capacity less than that of a semi-submersible platform.

15. The method of claim 14, further comprising providing that said lower package  
5 weighs between ten and forty tons.

16. The method of claim 14, further comprising:  
providing a disconnect mechanism comprising a first portion and a second  
portion;  
10 providing that said first portion of said disconnect mechanism is attachable to  
said lower package;  
providing that said first portion and said second portion of said disconnect  
mechanism are selectively separable;  
providing that an emergency disconnect package is mountable to said second  
15 portion of said disconnect mechanism; and  
providing at least one hydraulically actuated valve for said disconnect  
mechanism defining a bore through said at least one hydraulically actuated valve  
which is greater than seven inches.

20 17. The method of claim 16, further comprising:  
providing at least two hydraulically actuated valves for said lower package.

18. The method of claim 16, further comprising:

providing that said emergency disconnect package is securable to a riser; and

providing that said emergency disconnect package is operable to seal a lower end of said riser if said disconnect mechanism is activated to separate said emergency

5 disconnect package from said lower package.

19. The method of claim 16, further comprising:

providing that said emergency disconnect package is replaceable with a

subsea lubricator to permit subsea wireline operations without use of a riser.

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20. The method of claim 14, further comprising:

providing an integral swivel and flow head for a riser to permit a vessel

supporting said riser to weather around said riser.

15 21. The method of claim 14, further comprising:

providing that said at least one hydraulically actuated valve comprises a fail-

safe actuator mounted on one side of a valve body and a manual override actuator

mounted on an opposite side of said valve body.

20 22. The method of claim 14, further comprising:

mounting an independent supply of hydraulic fluid on said subsea intervention

package; and

providing that said at least one hydraulically actuated valve comprises an

actuator mounted on one side of said at least one hydraulically actuated valve operable to utilize said independent supply of hydraulic fluid.

23. The method of claim 14, further comprising:
- 5 providing that said at least one hydraulically actuated valve comprises a gate valve which comprises an integral cutter and seal assembly.